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ABSTRACT

The standard differentiates among telephone worker (WG-9), telephone mechanic (WG-10), and telephone mechanic (WG-11) in terms of duties, skill and knowledge, responsibility, physical effort, and working conditions. All are involved in installing, modifying, repairing, and maintaining telephone systems. The work requires knowledge and telephone equipment and installation procedures; knowledge of basic electrical principles as they pertain to the telephone system; the ability to understand and follow such technical guidance as circuit descriptions schematics and layout sheets; and the ability to locate and repair trouble within the telephone system. (AG)

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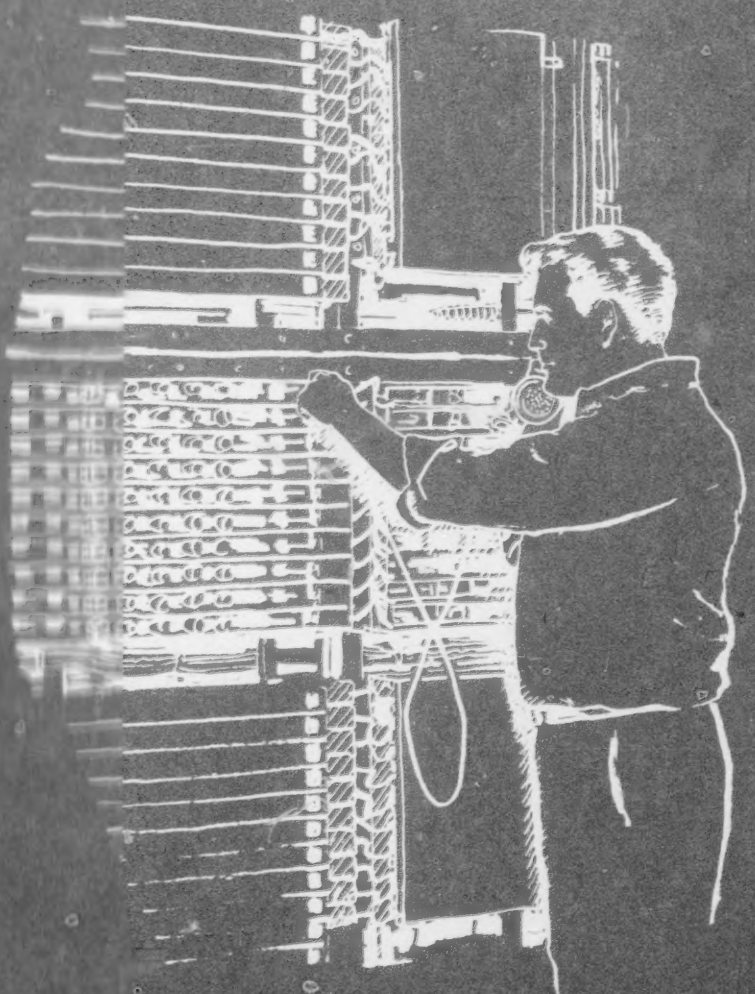
JOB GRADING STANDARD FOR TELEPHONE MECHANIC WG-2502



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BUREAU OF POLICIES AND STANDARDS

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COVERAGE OF THE STANDARD

This standard is for grading nonsupervisory jobs involved in installing, modifying, repairing, and maintaining telephone systems including central office, private branch automatic, and operator-attended exchanges and customer telephone sets. The work requires knowledge of telephone equipment and installation procedures; knowledge of basic electrical principles as they pertain to the telephone system; the ability to understand and follow such technical guidance as circuit descriptions schematics and layout sheets, and the ability to locate and repair trouble within the telephone system.

WORK NOT COVERED

—Work involved in installing, modifying, and adjusting telegraph and teletype equipment, alarm systems, wire carrier equipment, and communication cable systems. (See other series within the WG–2500 family.)

—Work involved in installing and repairing data phone, automatic digital network, wireless carrier terminals and repeaters, and cryptographic or other equipment requiring indepth knowledge of operating electronic principles. (See Electronics Mechanic, WG–2614 or other series within the WG–2600 family.)

TITLES

Jobs graded by this standard at WG–10 or above are to be titled *Telephone Mechanic.* Jobs graded by this standard below WG–10 (other than helper and intermediate jobs) are to be titled *Telephone Worker.*

GRADES

This standard does not describe all possible grades at which jobs might be established. If jobs differ substantially from the skill, knowledge, or other work requirements described for the jobs in the standard, they may warrant grading either above or below

the grades of these jobs based on the application of sound job grading methods.

HELPER AND INTERMEDIATE JOBS

Helper and intermediate telephone mechanic jobs are covered by U.S. Civil Service Commission job grading standards for Trades Helper and Intermediate Jobs. (WG–10 in this standard is to be used as the journeyman grade in applying the intermediate Job Grading Table.)

WG–2502–9 **Telephone Worker** WG–2502–9

Duties: As a team member or working alone, the WG–9 Telephone Worker installs, repairs, and maintains customer manual and dial telephone equipment.

—Surveys the installation area to determine work methods, tools, materials, etc., required to install or remove manual and dial telephone service.

—Installs such equipment and components as subscriber sets, transmitters, receivers, condensors, relays, induction coils, multiple switch keys, ringers, and buzzers.

—Runs wire between the components and to the outside cable system. Installs molding, insulators, connector and terminal boxes, and other protective and support items.

—Checks the system with central office mechanics for proper operation and for such characteristics as volume, clarity, and continuity.

—Performs onsite trouble shooting to determine the location and nature of trouble.

—Makes repairs by replacing and adjusting or cleaning and lubricating equipment components.

—May operate a crew truck to and from work areas.

Skill and Knowledge:

—Knowledge of basic electrical telephone circuits and the function of such individual components as switches, relays, transmitters, induction coils, and buzzers.

—Knowledge of different types of wire, color coding systems, conduits, insulators, clamps, brackets, etc., used to construct and protect the system.

—Ability to use such test equipment as hand test sets, volt-ohmmeters, ammeters, tone testers, and coordinate the test procedures with other employees operating the test board in the central office.

—Skill in using such handtools as wirecutters and strippers, drills, screwdrivers, hammers, and soldering irons.

—Skill in using lineman spurs and belt or ladder to climb poles or work on outside of buildings.

Responsibility: The WG–9 Telephone Worker receives his assignments from the supervisor or higher grade employee. He follows detailed layout sheets and wiring plans. He determines work methods and coordinates the work with telephone users and other telephone mechanics. To install the telephone systems, he selects and matches types of equipment components and determines such things as where to run the wire and the types of clamps, blocks, and conduits, etc., that are required.

To determine the nature and location of trouble in the system, he must evaluate the performance of the telephone circuits with test equipment and visually examine components and wires for such things as defective parts, bad insulation and loose connections. To make the repairs, he determines what parts or adjustments are required. The supervisory or higher grade employee provides advice and assistance on unusual problems and checks the work for adherence to acceptable trade practices.

Physical Effort: The work requires frequent bending, pulling wires, reaching, and using handtools. The WG–9 Telephone Worker stands and walks for extended periods and occasionally climbs and works on poles and ladders, and in awkward positions.

Working Conitions: The work is generally performed inside, often in dusty and dirty areas. The WG–9 Telephone Worker is subject to electrical shock and minor cuts and bruises from handling wires and equipment and from using handtools. When working outside, he is subject to falls from ladders and poles and severe electrical shock when working near electrical transmission lines.

WG–2502–10 **Telephone Mechanic** **WG–2502–10**

Duties: Installs, modifies, repairs, and maintains dial or automatic telephone systems including key and private branch automatic exchanges which include such features as intercommunications, visual and audio signalling, hold, or other options to telephone users.

—Surveys installation area to determine work methods, tools, materials, etc., required to install or modify the telephone systems.

—Selects equipment and circuits required for the features indicated in work orders and layout sheets.

—Installs such system components as backboards, key telephone units, terminals, connector blocks, wiring, and telephone sets and rewires the equipment for the features requested.

—Hooks up power source and conducts operational test of the installed system. Advises users on how to operate the equipment.

—Performs onsite trouble shooting and repairs by locating the causes and determining the nature of trouble and replacing and adjusting system components.

—Performs periodic maintenance. Visually checks equipment and corrects such sources of trouble as bare wires and loose connections. Lubricates and cleans mechanical components as necessary.

—May direct and instruct lower grade employees assigned to the same project.

—May operate a crew truck to and from work areas.

Skill and Knowledge:

—Thorough knowledge of different types of electromechanical, electronic, and solid state systems including their capabilities, functions of their major circuits and components such as electromagnetic relays, switching units, key telephone units, key telephone sets, and the associated cables and wiring used to interconnect the system.

—Knowledge of the characteristics, relationships, and measurements of AC and DC current as they relate to key and private branch automatic exchange telephone systems.

—Ability to locate and determine the nature of trouble by tracing and measuring electrical current through circuits for continuity

and proper operation of individual electrical and mechanical components.

—Ability to use such test equipment as telephone test sets, volt and ohmmeters, dial speed indicators, and be able to set up and follow test procedures.

—Ability to understand complicated layout sheets, wiring diagrams, schematics, and locate individual wire conductors by color code.

—Skill in using such handtools as drills, screwdrivers, pliers, hammers, and cable cutters.

Responsibility: The WG–10 Telephone Mechanic receives his assignments in the form of general duties or on a project basis. He usually works alone and determines the work sequences, tools, and materials required. To locate and determine the nature of trouble, he must find out how the equipment is performing and compare that with what it should be doing based on past experience and by reference to technical specifications. He follows or refers to layout sheets, building plans, circuit schematics and descriptions, and other government and manufacturer's technical guidance.

The work is checked by the supervisor for adherence to acceptable trade practices and by the efficient operation of the systems installed, modified, and repaired. The supervisor provides technical advice or assistance on unusual or very difficult problems.

Physical Effort: The work requires frequent bending, pulling cables and wires, using handtools, and working in awkward positions. The WG–10 Telephone Mechanic also walks and stands for extended periods and occasionally climbs ladders.

Working Conditions: The work is generally performed inside, often in dusty or dirty areas. The WG–10 Telephone Mechanic is subject to electrical shock and minor cuts and bruises from handling cable and equipment and from using handtools.

WG–2502–11 **Telephone Mechanic** **WG–2502–11**

Duties: Installs, repairs, and maintains telephone central office automatic exchange equipment such as those using the stey-by-step, XY, all relay, or electronic systems.

—Installs or rearranges equipment frames and shelves, and such equipment as line finders, switch banks, selectors, connectors, repeaters, peg counters, restricting post cams, and various trunk circuits.

—Lays jumpers, cross connections, and cables to interconnect the switching equipment, main distribution frame, manual switchboards, test desk, and associated auxiliary systems and power sources.

—Locates and determines the nature of trouble by observing and listening to the equipment operate and by using measuring tools and test equipment to check for such things as dirt, wear, adjustment, tension, and overheating of mechanical components and the function of electrical circuits.

—Repairs equipment by replacing defective parts and by such procedures as setting clearances, adjusting spring tensions, wipers, relay contacts, and other interrelated mechanisms.

—Maintains equipment by performing routine performance checks and by lubricating, cleaning, and removing accumulated moisture as required.

—May direct and instruct lower grade employees.

Skill and Knowledge:

—Understanding of the characteristics and principles of AC and DC electricity as related to the central office system.

—Comprehensive knoweldge of the major circuits and equipment and the functions and relationships of individual components such as relays and induction coils and transisistors in the central office system.

—Knowledge of solid state circuitry and the mechanical principles, movements, and sequences of intricate precision switching equipment.

—Ability to detect malfunctioning equipment by listening to it and observing its operation.

—Knowledge of trouble shooting procedures such as linefinder chain and operation tests, selector level truck and continuity tests, and other procedures to locate and determine the nature of trouble.

—Skill in using such test equipment as handsets, voltmeters, ohmmeters, current flow and continuity testers, and pulse repeaters.

—Skill in using such tools as feeler and gram gages, burnishers, spring benders, screwdrivers, pliers, and soldering equipment to adjust small, intricate equipment to operating specifications.

—Ability to understand wire color codes and complex schematics wiring diagrams, circuit descriptions, and other government and manufacturer's specifications.

Responsibility: The WG–11 Telephone Mechanic receives his assignments in the form of general duties or on a project basis. He independently installs equipment or determines the nature of the trouble and the repairs required. To install and repair the equipment he must understand and consider the intricate relationships between mechanical, electrical, and electronic components as they work together in the same or different circuits. He refers to complicated schematics, wiring diagrams, circuit descriptions, and other technical guidance.

The completed work is checked by the supervisor for adherence to acceptable trade practices and technical specifications and by the efficient operation of the systems repaired and installed. The supervisor provides technical advice or assistance on unusual or very difficult problems.

Physical Effort: The work requires standing and walking on concrete floors for extended periods, climbing ladders, and frequent bending and working in awkward positions.

Working Conditions: The work is performed in clean, well lighted and heated areas. The WG–11 telephone mechanic is subject to falls from low ladders, minor cuts, bruises, burns, and electrical shock.

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